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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,660	04/02/2004	Jonathan Qiang Li	10031315-1	3412

7590 05/13/2008

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ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
05/13/2008	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/817,660
Filing Date: April 02, 2004
Appellant(s): LI, JONATHAN QIANG

Mr. Gregory Osterloth
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 21 February 2008 appealing the Office action mailed 21 August 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Loui et al.	USP (7,039,239 B2)
Donoho	Non-Patent Literature (IEEE Computer Graphics and Applications, July 1988, pages 51-58).

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Whether claims 1-12, 22 and 23 should be rejected under 35 USC 102(e) as being anticipated by Loui et al. (US 7,039,239 B2).
2. Whether claims 13-21 and 24-26 should be rejected under 35 USC 103(a) as being unpatentable over Loui et al. (US 7,039,239 B2) in view of Donoho (IEEE Computer Graphics and Applications, July 1988, pages 51-58).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

A. Claims 1-12, 22 and 23 are rejected under 35 U.S.C. 102(3) as being anticipated by Loui et al. (US 7,039,239 B2).

Regarding Claims 1-12, 22 and 23, "A display 114 is electrically connected to the microprocessor-based unit 112 for displaying user-related information associated with the software, e.g., by means of a graphical user interface." at column 13, line 64. In the following description, a preferred embodiment of the present invention would ordinarily *be implemented as a software program,* although those skilled in the art will readily recognize that the equivalent of such software may also be constructed in hardware." at column 3 line 17; "If the invention is implemented as a computer program, the program may be stored in conventional computer readable storage medium, which may comprise, for example; magnetic storage media such as a magnetic disk (such as a floppy disk or a hard drive) or magnetic tape" at column 3, line 27.

Regarding Claim 1: Loui discloses a computer readable medium including executable instructions for processing training data for a statistical classification application, said computer readable medium comprising:

code for retrieving a plurality of training data structures that each comprise data members corresponding to feature elements and a data member identifying one of a plurality of classes ("the main aim of this technique is to find a class probability map over the input image representing the probability of each pixel to have come from a given class. As the first step, several features are extracted in a feature extraction stage 12 from an input color image 10." at column 3, line 38);

code for processing each of said plurality of training data structures using probabilistic models that are a function of said feature elements to calculate a respective probability indicative of the respective training data structure belonging to its identified class (Refer to Figure 1, numeral 28);

and code for generating a scatter plot, using said plurality of training data structures, that visually indicates probabilities of said training data structures belonging to identified classes (Refer to Figures 10 (a)-(e)).

Regarding Claim 2: Loui discloses code for annotating points in said scatter plot to indicate probabilities of said plurality of training data structures belonging to identified classes (It is implied that through uses of "A keyboard 116 [which] is also connected to the microprocessor based unit 112 for permitting a user to input information to the software." at column 13, line 67 that the software disclosed by Loui possesses the code for annotating points).

Regarding Claim 3: Loui discloses code for generating a scatter plot displays points in said scatter plot using a predetermined color to indicate training data structures having probabilities below a threshold value (Referring to Figure 1, numeral 12… "The nature of these features may vary according to their interpretational power from low level feature information such as color, texture, shapes, wavelet coefficients, etc. to higher, semantic-level feature information such as location of faces, people, structure, etc." at column 3, line 45).

Regarding Claim 4: Loui discloses code for identifying regions of said scatter plot that correspond to said plurality of classes (For example, the implied code for the present invention discloses Figure 6 which "shows the changes in KL Divergence when the number of components (or Gaussians), K are increased. As K is increased from 1 to 2, sharp decrease in KLD can be noticed. After K=5, the KLD almost stabilizes indicating the non-significance of further increments in K. Hence, we have chosen 5 as the number of clusters in the original

image. Intuitively, one can observe five broad categories in the input image i.e., sky, water, red wall, floor/skin and tree." at column 9, line 33).

Regarding Claim 5: Loui discloses code for receiving first input from a user to select a point corresponding to a respective training data structure (Refer to Figure 1, numeral 10 and numeral 24. It is implied that the present invention as disclosed by Loui possesses a method to perform a process which holds a code to input from a user, a corresponding point to a respective training structure; "...a) extracting one or more features from an input image composed of image pixels…" at column 2, line 17; also refer to Figures 7(a-c)).

Regarding Claim 6: Loui discloses code for displaying values of feature elements of said respective training data structure corresponding to said selected point (Refer to Figure 12, numeral 114; Based on the present invention disclosed by Loui, the method of this invention performs a process which accepts a code that displays values of feature elements as exhibited throughout and at Figure 12, numeral 114).

Regarding Claim 7: Loui discloses code for displaying an image file associated with an object from which feature elements were derived in response to said code for receiving first input (Refer to Figure 12, numeral 114; Based on the present invention disclosed by Loui, the method of this invention performs a process which accepts a code that displays an image file as exhibited throughout and at Figure 12, numeral 114).

Regarding Claim 8: Loui discloses code for receiving second input from said user to reclassify said respective training data structure corresponding to said selected point (Refer to Figure 12, numeral 114; Based on the present invention disclosed by Loui, the method of this invention performs a process which accepts a code that receives a second input from a user to reclassify training data as exhibited throughout and at Figure 12, numeral 114).

Regarding Claim 9: Loui discloses code for revising said probabilistic models in response to said code for receiving said second input, wherein said code for processing is operable to recalculate probabilities of said plurality of training data structures belonging to identified classes using said revised probabilistic models (Refer to Figure 7 (b) and (c)).

Regarding Claim 10: Loui discloses code for receiving second input from said user to delete said respective training data structure corresponding to said selected point (Refer to Figure 7 (b) and (c)).

Regarding Claim 11: Loui discloses a method for processing training data for a statistical classification application ("…the invention resides in a method for classification of image regions by probabilistic merging of a class probability map and a cluster probability map." at column 2, line 14, e.g. Figure 1, numeral 24), the method comprising: accessing a plurality of training data structures wherein each training data structure includes a plurality of feature variables ("As the first step, several features are extracted in a feature extraction stage 12 from an input color image 10." at column 3, line 41; "The nature of these features may vary…such as color, texture, shapes, wavelet coefficients, etc…" at column 3, line 45) and a variable identifying one of a plurality of classes ("Most common techniques are either based on maximization of mutual

information or some sort of statistical test of dependence between the classes and the features." at column 3, line 58); calculating a respective confidence value for each of said plurality of training data structures that is indicative of a probability of the respective training data structure belonging to its identified class ("...selects how many clusters there are in the image...and employs a clustering algorithm 20 to cluster the similar pixels in distinct groups..." at column 4, line 2); and generating a graphical user interface for a scatter plot that visually indicates confidence values for said plurality of training data structures ("A display 114 is electronically connected to the microprocessor-based unit 112 for displaying user-related information associated with the software, e.g., by means of a graphical user interface." at column 13, line 64).

Regarding Claim 12: Loui discloses annotating at least a subset of points in said scatter plot with said confidence values ("A keyboard 116 is also connected to the microprocessor based unit 112 for permitting a user to input information to the software." at column 13, line 67).

Regarding Claim 22: Loui discloses a system for processing training data for a statistical classification application ("Figure 12 is a perspective diagram of a computer system for implementing the present invention." at column 3, line 5, (e.g. Figure 12, numeral 110)), the system comprising: means for processing a plurality of training data structures to generate a plurality of confidence values ("The computer system 110 includes a microprocessor-based unit 112 for receiving and processing software programs and for performing other processing functions." at column13, line 61), wherein said each of said plurality of training data structures defines feature values and identifies one of a plurality of classes ("...performing supervised learning based on the extracted features to obtain a class probability map of the image pixels..."

at column 2, line 21), wherein said confidence values indicate probabilities of objects having said feature values belonging to said identified classes ("The preferred technique for probabilistic classification of image regions is shown in Figure 1. The main aim of this technique is to find a class probability map over the input image representing the probability of each pixel to have come from the given class." at column 3, line 37); and means for displaying a scatter plot using said plurality of training data structures that provides visual indication of probabilities of points belonging to identified classes ("A display 114 is electronically connected to the microprocessor-based unit 112 for displaying user-related information associated with the software, e.g., by means of a graphical user interface." at column 13, line 64).

Regarding Claim 23: Loui discloses means for annotating points in said scatter plot to indicate probabilities of said plurality of training data structure belonging to identified classes ("A keyboard 116 is also connected to the microprocessor based unit 112 for permitting a user to input information to the software." at column 13, line 67).

Claim Rejections - 35 USC § 103

B. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

C. Claims 13-21, 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loui et al in combination with Donoho (IEEE computer Graphics and Applications 1988-July, pages 51-58, hereinafter referred to as Donoho).

Regarding Claim 13:

Loui et al discloses all the claimed elements as listed above.

Loui does not specifically disclose said display unit from the graphical user interface uses a predetermined color to identify training data structures associated with a confidence value below a threshold value.

However, Donoho teaches:

wherein said display unit from the graphical user interface uses a predetermined color to identify training data structures ("Display options cover a large range…like: Background color-Display data as white points on a black background or as black ones on a white background." at page 55, paragraph 6, left column under Display Options); associated with a confidence value below a threshold value ("Other features…include the ability to inspect a spread-sheet like view of the entire data set, which the user can scroll through and edit", at page 56, paragraph 4, left column).

Loui and Donoho are combinable because they are in the same field of dynamic graphics on a computer. (See Introduction at page 51 (Donoho)).

At the time the invention was made, it would have been obvious to ("Display options cover[ing] a large range…like: Background color-Display data as white points on a black background or as black ones on a white background." at page 55, paragraph 6, left column under Display Options); associated with a confidence value below a threshold value ("Other features…include the ability to inspect a spread-sheet like view of the entire data set, which the user can scroll through and edit", at page 56, paragraph 4, left column) as taught by Donoho to the graphical user interface [used] for a scatter plot that visually indicates confidence values for [a] plurality of training data structures as disclosed by Loui because the display options taught by Donoho allow the user to manipulate all associated data structures as disclosed in applicant's invention.

Therefore, it would have obvious to skilled artisan at the time that the invention was made, to combine the teachings of Donoho with the disclosure of Loui to obtain the specified claimed elements of Claim 13.

Regarding Claim 14: Donoho teaches wherein said threshold value is determined by receiving input from a user ("As we have seen, MacSpin allows the user to transform data by any of the operations listed in Figure 6. The user may also create linear combinations of several variables." at page 56, paragraph 7, right column under Subset Operations).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to utilize "MacSpin [which] allows the user to transform data by any of the operations listed in Figure 6. The user may also create linear combinations of several variables." at page 56, paragraph 7, right column under Subset Operations) as taught by Donoho to the graphical

user interface as disclosed by Loui because the display options taught by Donoho allow the user to manipulate all associated data structures as disclosed in applicant's invention.

Regarding Claim 15: Donoho teaches wherein said graphical user interface identifies regions of said scatter plot associated with each of said plurality of classes (For example, Figure 5. Animation showing changes in the performance of American cars over time: the years 1971, 1978 and 1983 are shown at page 52."Further rotation shows that the data consist of three clusters. We could also highlight "American", "European," and "Japanese" subsets in turn, and find out where they are on the display. " at page 53, paragraph 3, right column under Highlighting Subsets).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to utilize by way of example, in combination with Loui to "Animat[e] showing changes in the performance of American cars over time: the years 1971, 1978 and 1983 are shown at page 52."Further rotation shows that the data consist of three clusters. We could also highlight "American", "European," and "Japanese" subsets in turn, and find out where they are on the display. " at page 53, paragraph 3, right column under Highlighting Subsets) and further through example at Figure 5 as taught by Donoho because this example allows the user to identify regions of said scatter plot associated with each of said plurality of classes.

Regarding Claim 16: Donoho teaches receiving user input to select a point of said scatter plot ("The program offers a broad range of data manipulation and calculation features. These allow the user to interactively transform, edit, and categorize data as patterns in the display indicate." at page 51, paragraph 2, at right column in summary section; For example, "The view in the plot window shows all the cars in an x-y plot...The points represent individual cars. By moving the

cursor to a point and clicking we find its identity." at page 52, paragraph 2, right column under x-y Plots).

At the time the invention was made, it would have been obvious to utilize "The [MacSpin] program [which] offers a broad range of data manipulation and calculation features as detailed above and as taught by Donoho to the graphical user interface as taught by Loui because the user input manipulation is faster and more efficient if the graphical user interface is all inclusive and all associated data structures can be easily manipulated.

Regarding Claim 17: Donoho teaches displaying values of feature element variables of a training data structure corresponding to said selected point (For example, Figure 2. Info pop-up for Datsun ZX at page 52. "The "variables" window shows the variables measured for each car." at page 52, paragraph 1, left column).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use for example, @ Figure 2 [to use]" Info pop-up for Datsun ZX at page 52."The "variables" window shows the variables measured for each car." at page 52, paragraph 1, left column) as taught by Donoho to the graphical user interface as disclosed by Loui because the user input manipulation is faster and more efficient if the graphical user interface is all inclusive and all associated data structures can be easily manipulated.

Regarding Claim 18: Donoho teaches displaying an image file associated with an object from which values (For example, Figure 7. American cars, with special markers given to model years 1971 to 1983, at page 53 and Figures 2 and 6) of a plurality of feature variables corresponding to said selected point, were obtained ("The x-y plot shows the general trend of two –variables-

what combinations of speed and economy are available." at page 53, paragraph 1, left column under x-y-z Plots).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to use for example, @ Figure 7 to illustrate that "American cars, with special markers given to model years 1971 to 1983..." at page 53 and Figures 2 and 6 [shows]"The x-y plot shows the general trend of two –variables-what combinations of speed and economy are available." at page 53, paragraph 1, left column under x-y-z Plots) as taught by Donoho to explain the image file associated with multiple objects and feature variables because the user input manipulation is faster and more efficient if the graphical user interface is all inclusive and all associated data structures can be easily manipulated.

Regarding Claim 19: Donoho teaches deleting said training data structure corresponding to said selected point in response to further user input ("By choosing "Exclude" from the events menu, we [temporarily] remove them from the display. The rotation has helped us identify and remove outliners." at page 53, paragraph 2, left column under x-y-z Plots).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to illustrate deleting said training data structure corresponding to said selected point in response to further user input as taught by Donoho to the scatter plot as disclosed by Loui because the "Events Menu" as taught by Donoho allows the user to manipulate the data from a simple drop menu within the code used to classify the statistical application of this invention.

Regarding Claim 20: Donoho teaches reclassifying said training data structure corresponding to said selected point in response to further user input ("Animation permits us to study the effect of a fourth variable. Suppose we are interested in how the American auto industry has changed

over time. We can select the American cars, and then select "Focus" from the events menu." at page 53, paragraph 4, left column, under Highlighting Subsets).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to reclassify said training data structure corresponding to said selected point in response to further user input as taught by Donoho and add the practice of reclassification to the scatter plot application as disclosed by Loui because it would allow the user to manipulate the data from a simple drop menu within the code used to classify the statistical application of this invention.

Regarding Claim 21: Donoho teaches refining probabilistic models after reclassification of at least one of said plurality of training data structures by a user ("The researcher can also transform existing variables to create new ones." at page 53, paragraph 5); and repeating said calculating and displaying in response to said refining ("Features like this make MacSpin useful not just for displaying data but for manipulating it to get the right display." at page 53, paragraph 5, right column under Transformations).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to refine the probabilistic models after reclassification as taught by Donoho and add that practice to the scatter plot information as disclosed by Loui because the practice of reclassification to the scatter plot application as disclosed by Loui would allow the user to manipulate the data from a simple drop menu within the code used to classify the statistical application of this invention.

Regarding Claim 24: Donoho teaches means for receiving first user input to select a point in said scatter plot ("The points represent individual cars. By moving the cursor to a point and clicking, we find its identity." at page 52, paragraph 2, right column under X-Y Plots).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to utilize [moving] the cursor to a point and clicking, we find its identity." at page 52, paragraph 2, right column under X-Y Plots) as taught by Donoho as a means for receiving a user input and add that application to the processing means of generating confidence values as disclosed by Loui because the user input will create a larger range of controlled user options.

Regarding Claim 25: Donoho teaches means for receiving second user input to reclassify a training data structure corresponding to said selected scatter point ("By rotating the plot, we get an extra dimension into the display…We stop the rotation and identify it…By pointing at their names on the list, we highlight them in the plot window. They are outliners. By choosing "Exclude" from the events menu, we [temporarily] remove them from the display." at page 53, paragraph 1 and 2, right column under X-Y-Z Plots).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to "rotat[e] the plot, we get an extra dimension into the display…We stop the rotation and identify it…By pointing at their names on the list, we highlight them in the plot window. They are outliners. By choosing "Exclude" from the events menu, we [temporarily] remove them from the display." at page 53, paragraph 1 and 2, right column under X-Y-Z Plots) as taught by Donoho to the application of processing confidence values as disclosed by Loui because the user input, successively and in numerical order will create a larger range of controlled user options.

Regarding Claim 26: Donoho teaches means for revising probabilistic models associated with said plurality of classes ("The researcher can also transform existing variables to create new ones." at page 53, paragraph 5, right column under Transformations), wherein said means for processing reprocesses said plurality of training data structures in response to said means for revising and said means for displaying redisplays said scatter plot using revised probabilities from said means for processing ("Features like this make MacSpin useful not just for displaying data but for manipulating it to get the right display. For example, as shown in Figures 6 and 7, "Looking at the plots with this new variable shows that the American cars got more efficient and not just smaller over this period. Variable transformations are all included in a special "Transformations" window (see Figure 6), and executed by pointing and clicking with the mouse." At page 53, paragraph 5, right column under Transformations).

At the time the invention was made, it would have been obvious to one of ordinary skill in the art to add a means for revising the probabilistic models as taught by Donoho to the means for processing training data structures to generate a plurality of confidence values as disclosed by Loui because Donoho teaches the actual program which creates a "high level of interaction between the analyst and data." at page 51, paragraph 1, left column in the summary section. Additionally, MacSpin "... places a great deal of emphasis on completeness of display options, on quality of the user interface, and on ease of use." At page 51, right column under the summary section.

(10) Response to Argument

Each of the remarks and or arguments filed with the appeal brief has been considered. A complete response to those arguments is listed here below:

1. *Summary of Remarks @ page 11:*

The examiner asserts that Loui discloses “code for retrieving a plurality of training data structures that each comprise data members corresponding to feature elements and a data member identifying one of a plurality of classes” in column 3, line 38.

More specifically, appellant notes that Luoi’s feature extraction stage extracts, form an image features (or feature sets) of unknown classification. Loui’s feature extraction stage 12 is not equivalent to the “plurality of training data structures” that is retrieved by appellant’s claim 1.

Examiner’s Response: The Examiner respectfully disagrees with the appellant’s arguments. At column 3, line 38, Loui discloses “that the preferred technique (is) for probabilistic classification of image regions is shown at Figure 1. The main aim of this technique is to find a class probability map over the input image representing the probability of each pixel to have come from a given class.”

For example, further support of labeled training data of a known classification can be found at column 11, lines 20-27. Specifically, “Suppose one is training for the data belonging to the class

“sky”.” This statement clearly exemplifies that the image features extracted at numeral 12, contain a plurality of training data structures in this instance, "data belonging to the class "sky". It can be understood that this particular image also has grass, and trees for example. Upon further disclosure, Loui discloses that there are a total of five classes; sky, water, sand/soil, skin and grass/tree at column 10, lines 63. Loui is disclosing that all of the pixels that fit within a certain range, certainly where those pixels are of a blue color would be “probabilistically” be classified as data belonging to the class “sky”. Additionally at column 11, lines 2-5, "Mixture models are used to represent the density of data belonging to different classes.

Also of note at column 4, lines 6-8, Loui disclosed that “Pixels belonging to different classes may get clustered in the same group depending on the composition of pixel data in the feature space.

At column 4, lines 12-16, Loui also discloses “In addition, the supervised learning is based on labeled class training data that may include wider variations in pixel appearances due to different physical conditions, e.g. sharp illumination changes.” This statement also disclosed by Loui clearly states that the supervised learning data (numeral 16) is based on labeled class training data meaning that it already has a class identification associated with its analysis.

As previously stated in the last Office Action; the Office Action generally asserted that all the elements were indeed disclosed by Loui, however, in light of the present argument; Examiner has pointed out very specific example(s) for claims 1-12, 22 and 23 of how the reference does teach the claimed invention.

Regarding Claims 1-12, 22 and 23, "A display 114 is electrically connected to the microprocessor-based unit 112 for displaying user-related information associated with the software, e.g., by means of a graphical user interface." at column 13,line 64. In the following description, a preferred embodiment of the present invention would ordinarily *be implemented as a software program,* although those skilled in the art will readily recognize that the equivalent of such software may also be constructed in hardware." at column 3 line 17 ; "If the invention is implemented as a computer program, the program may be stored in conventional computer readable storage medium, which may comprise, for example; magnetic storage media such as a magnetic disk (such as a floppy disk or a hard drive) or magnetic tape" at column 3, line 27.

Summary of Remarks @ page 11: "The Examiner further asserts that Loui discloses "code for processing each of said plurality of training data structures using probabilistic models that are a function of said feature elements to calculate a respective probability indicative of the respective training data structure belonging to its identified class".

More specifically, appellant notes that Loui's class probability map 28 is not indicative of the probability of a training data structure belonging to its identified class.

Similarly @ page 12 (Summary): Loui does not disclose any method for calculating a probability indicative of whether any item of the labeled training data 24 belongs to its identified class.

Examiner's Response: The Examiner respectfully disagrees with appellant's arguments.

Further support of the Examiner's arguments can be found at column 4, lines 12-16, Loui also discloses "In addition, the supervised learning is based on labeled class training data that may include wider variations in pixel appearances due to different physical conditions, e.g. sharp illumination changes." This statement also disclosed by Loui clearly states that the supervised learning data (numeral 16) is based on labeled class training data meaning that it already has a class identification associated with its analysis.

With respect to the class probability map at numeral 28, further support can be found at column 10, lines 59, "Supervised learning 16 (see Figure 1) has been used for assigning each image pixel a probability of association with every semantic class belonging to the recognition vocabulary. In our current example, the vocabulary contains five classes, i.e., sky, water, sand/soil, skin and grass/tree. The term "supervised" is derived from the fact that labeled training data is used. A generative approach is taken to obtain probabilities of association between a pixel and a class.

Summary of Remarks @ page 12: The Examiner also asserts that Loui discloses "code for generating a scatter plot, using said plurality of training data structures that visually indicated probabilities of said training data belonging to identified classes. As taught by Loui, the cluster probability maps shown in Figures 7(a)-(e) relate to "unsupervised learning". although Loui does disclose a class probability map for the input image 10 in Figure 9, it is noted that the class probability maps shown in Figure 9 does not indicate "probabilities of training data structures

belonging to identified classes", as required by applicant's claim 1. Figure 9 is not a "scatter plot".

Examiner's Response: Examiner respectfully disagrees.

With respect to the remarks that Loui does not disclose a scatter plot, additional support can be found at column 12, lines 15-25 where Loui states that "The output of the supervised learning **is a class probability map** 28 (see Figure 1) for each class in the recognition vocabulary. A class probability map shows the probability of each pixel to have come from a given class, i.e. p(x/w). A class probability map corresponding to class "grass/tree' of input image (Fig. 2) is given in Figure 9. A brighter pixel indicates higher probability. It can be seen that the generative model 22 has correctly classified the grass/tree regions with high probability. As shown at Figure 10 (a)-(e) and similarly but more specifically at Figure 9 Loui discloses that the pixels have come from a given class.

Additionally refer to column 13, lines 26-33 where Loui disclosed that "The posterior probabilities of different classed given cluster gave been plotted. Figure 10(a)-(e) gives the plots corresponding to five cluster probability maps. It is clear from the plots that cluster j=1 has much higher probability of being from class 'grass/tree" than the other four classes. Also, this is the only cluster that has high "grass/tree" probability."

From the above stated discussion, Loui states that the classes associated with each plot from Figures 10(a)-(e) are in correspondence with five clustering maps. The details of the plot are

associated with the probability that one class will be obviously associated with a respective or chosen class.

Summary of Remarks @ page 13: With respect to claims 13-21 and 24-26, the Examiner asserts that Loui teaches the elements of base claims 11 and 22, and Donoho teaches the additional limitations set forth in claims 13-21 and 24-26. However, the appellant asserts that claims 13-21 and 24-26 are allowable, at least, because 1) they respectively depend from claims 11 and 22 and 2) Donoho does not teach that which is missing from Loui (as discussed in Section 1 of these Remarks/Arguments, supra).

Examiner's Response: Examiner respectfully disagrees.

This Examiner's Answer to appellant's appeal brief asserts that the base claims 11 and 22 were disclosed by Loui in the 102(e) rejection as previously stated and detailed above. The additional limitations of claims 13-21 and 24-26 are taught by Donoho. The explanations of those limitations are shown above at the 35 USC 103(a) rejections above.

Herein, Examiner has expressed and clearly articulated exactly where the additional limitations are taught in the Donoho reference and has provided motivation to combine each element of Claims 13-21 and 24-26 with base claims 1, 11 and 22.

Examiner has used the same discussion of each rejection based on Loui et al and Donoho to state the case(s) of obviousness over the applicant's claimed invention. The nature of the combination and the motivation to combine is clearly laid out and proper. Specifically, the motivations to combine the two references were taken directly from the reference(s).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Mia M Thomas/

Examiner, Art Unit 2624

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